

PROJECT NUMBER: 6505
PROJECT TITLE: Special Investigations/Methods Development
PROJECT LEADER: D. F. Ingraham
PERIOD COVERED: February 1988

I. PROJECT ART

A. Objective: To investigate the role and fate of ammonia, carbon dioxide, and pH in the ammonium bicarbonate (AB) application.

B. Results:

Time studies of the loss of carbon dioxide were conducted for thin bright and thin burley tobaccos. Generally, the measured amount of carbon dioxide on the tobacco after AB application never equalled the levels predicted by calculation. Within one hour after application the carbon dioxide levels were low but constant, even after two hours. A time study of ammonia in sealed and unsealed vials was conducted using thin bright tobacco and an AB application level of three percent. After eight days the ammonia values of the tobacco stored under these two conditions were essentially the same although somewhat lower than at day zero. This suggests that this tobacco, under these conditions, loses little ammonia, and what is lost is not lost due to volatilization.

A total of 50 tobacco samples were analyzed for nicotine content.

C. Plans: To continue the carbon dioxide and ammonia studies using other tobacco types.

II. ELEMENTAL ANALYSIS

A. Objective: To provide quantitative and qualitative elemental data on tobacco, cigarette paper, material evaluation samples, and special project samples.

B. Results:

The Tracor 4020 X-ray spectrometer was transferred to TQAF. It was recalibrated and restandardized at the new location. A bright monitor and it's specifications were sent as well. The X-ray spectrometer is ready for routine operation in QA.

The calibration and standardization of the Tracor 5000 X-ray spectrometer using the new thin-film software is complete. Known samples of cigarette and tipping paper are being analyzed to test accuracy. This software has potential applications in many areas of multielement analysis.

A total of 57 samples were analyzed for various elements in support of ART and other R&D projects. Samples of tipping paper were screened for relative elemental concentrations using X-ray fluorescence.

C. References:

1. Lewis, J. Y., "Transfer and Maintenance of Tracor X-Ray Fluorescence Spectrometer," memo to D. Donher, February 1, 1988.
2. Lewis, J. Y., "X-Ray Fluorescence Analysis of Papers (request codes P883 and P885)," memo to R. Arthur, February 23, 1988.

III. ANALYSIS OF RESIDUAL SOLVENTS IN PACKAGING MATERIALS

- A. **Objective:** To provide headspace analysis for volatile solvents of various packaging materials.
- B. **Results:** Several different capillary and megabore GC columns with thick films were investigated as alternatives to the Poraplot Q column currently in use. The major shortcoming of the Poraplot Q column is the shift in retention times of components as a function of amount present. None of the columns examined so far were judged as satisfactory, primarily due to incomplete retention or separation of some components in the headspace standard mixture.
- C. **Plans:** Investigate other columns as possible replacements for the Poraplot Q. Continue to work on development of the overall method for transfer to QA.

IV. RESPONSE TO ANALYTICAL REQUESTS

- A. **Objective:** To provide analytical support to R&D and Operations personnel and projects.

- B. **Results:**

Analyses and investigations by the project personnel during the month of February included:

Four flavor samples were analyzed for various compounds at the request of FTR.

Two flavor samples were analyzed for CF. CF was present in one of the samples.

Two customer complaint samples were analyzed for possible contaminants. One sample contained high levels of tax stamp ink solvents.

- C. **References:**

1. Ingraham, D. F., "CC 880203007, Control no. 8806 - Marlboro LS - Michael McGivney," memo to J. J. Pollard, February 13, 1988.
2. Ingraham, D. F., "PLC 88005, Control no. 8807 - Marlboro FTB - Michael Lorenzo," memo to J. J. Pollard, February 19, 1988.